

From
Standard Software for
Enterprise Resource Planning

To
Foundations of Machine Learning
and Data Mining



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Lab classes: Rainer Marrone

Lecture: Thursdays (90 minutes)
Lab classes: Fridays (60 minutes)

Prerequisite:
Basic Mathematics



Enterprise Services Architecture and Composite Application Framework

Motivation:

**Managers should be enabled to have
existing modules combined in a flexible way**

**Managers must understand what those modules
can achieve (and also what they can't)**

Some SAP slides in the sequel are based on:

Master Thesis Mariusz Chechelski



Agenda

- Objectives
- Enterprise Services Architecture (ESA)
- SAP NetWeaver Technologies
 - Composite Application Framework (CAF)

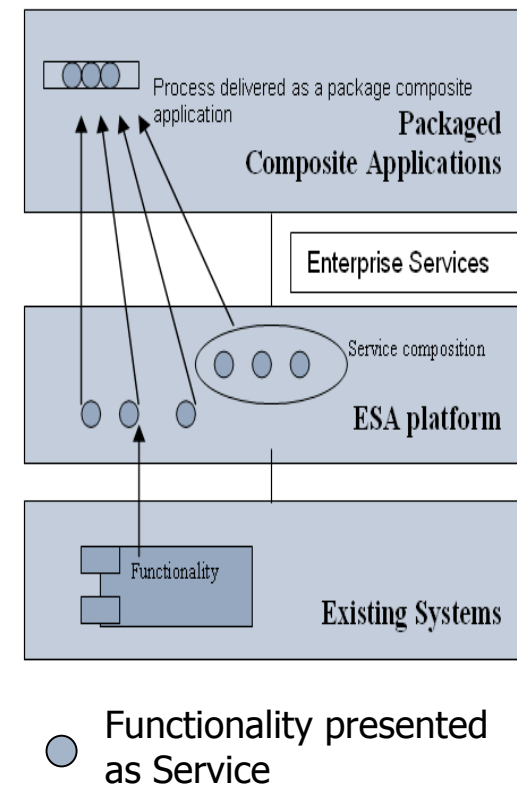


Objectives

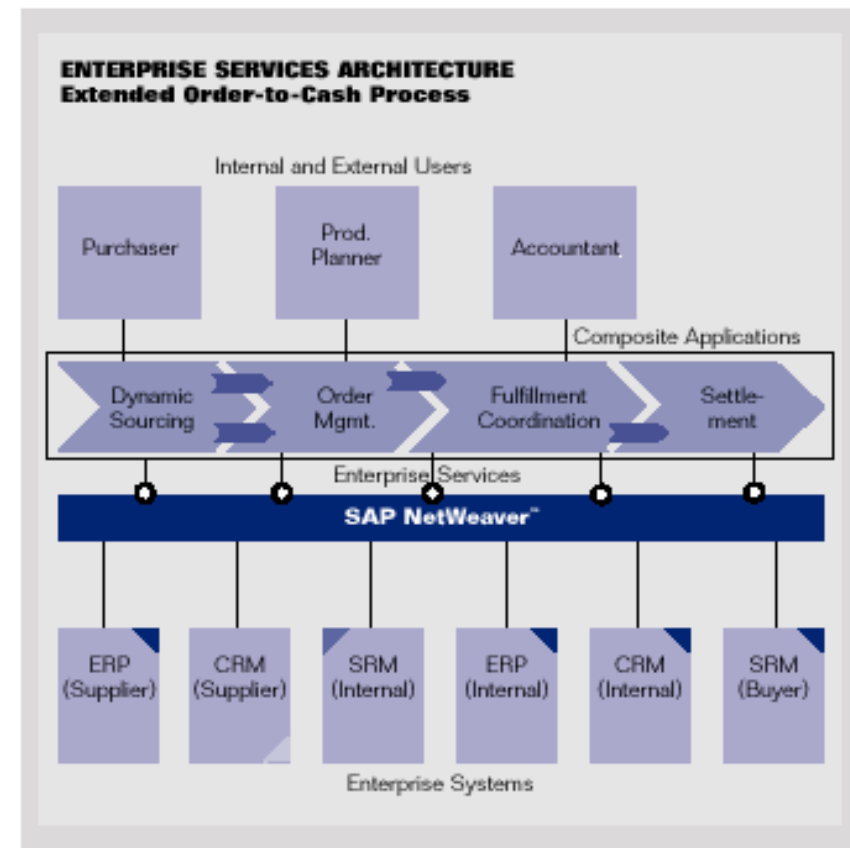
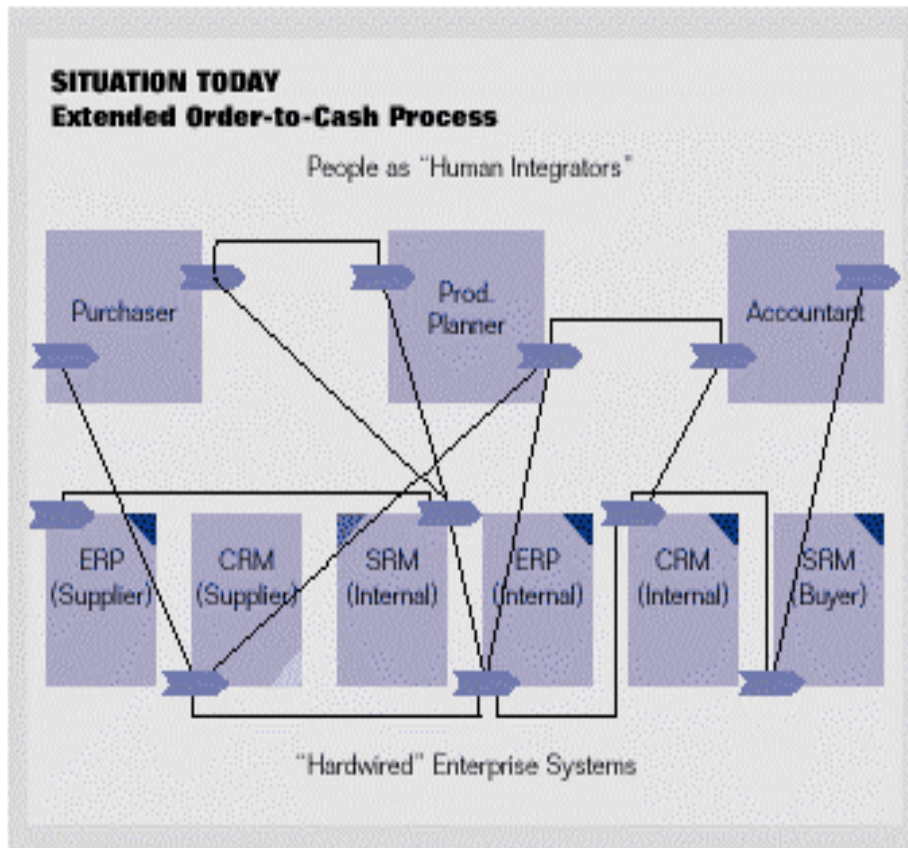
- Development and Evaluation of tools for building composite applications
 - To discuss ESA concepts with regard to the Service-Oriented Architecture (SOA) approach
 - To identify areas giving quick business benefits when using the new approach of interfacing with composite applications.
 - To identify major changes concerning the organizational and implementation methodologies when using the ESA approach

Enterprise Services Architecture

- Enterprise Services Architecture is a methodology for building reliable services-oriented applications
- Architecture Goals
 - **Enable services centric software design** (Componentization, Services as wrappers for existing functionality)
 - **Establish ONE service infrastructure with uniform**
 - Service Definition
 - Service Implementation
 - Service Usage for all types of scenarios (UI,A2A,B2B, ...)
 - **Enable model-driven development**



Example for moving to ESA



ERP: Enterprise Resource Planning, CRM: Customer Relationship Management,
SRM: Supplier Relationship Management

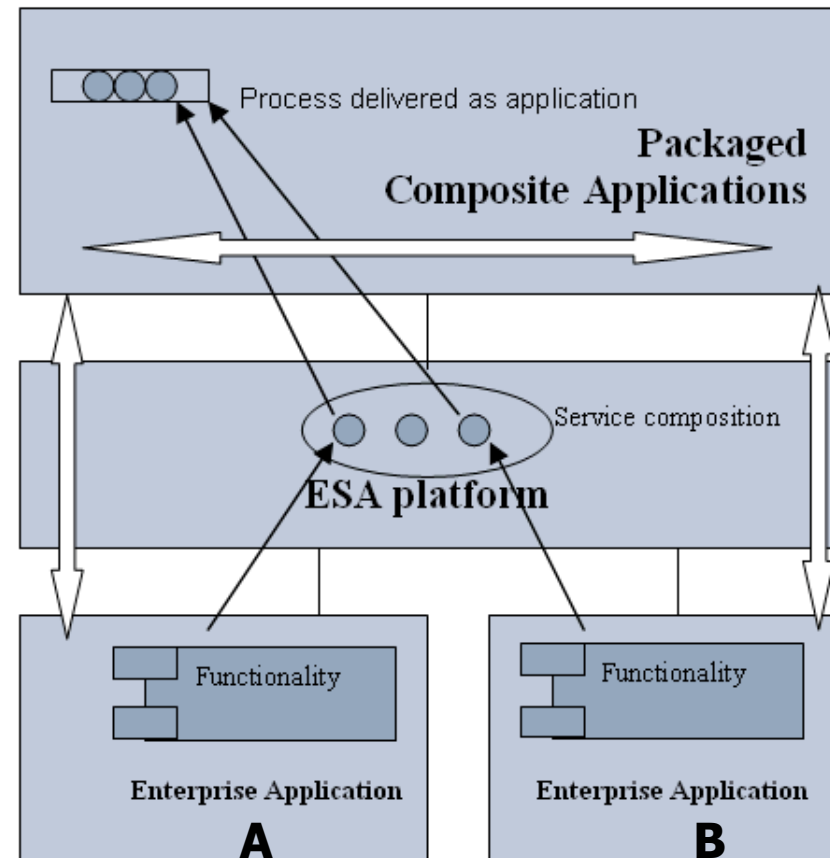
SAP Sources

ESA – Composite Applications (1)

All applications that consume services and data, and are orchestrated to reflect new processes with the help of service-based architecture are considered **composite applications**.

Characteristics of composite applications:

- composite
- collaborative
- content-driven



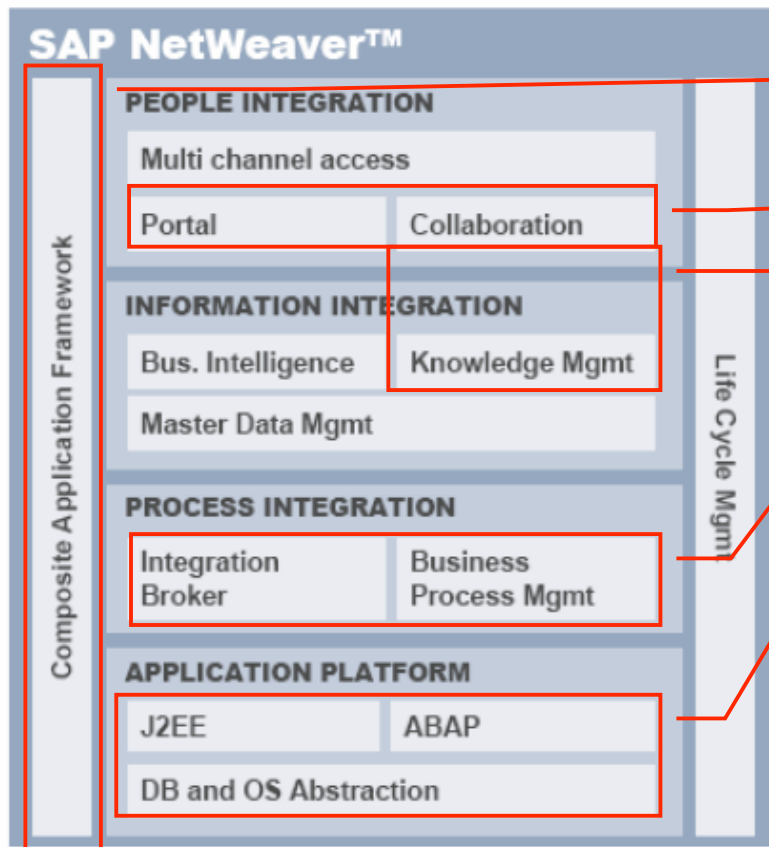


ESA – Composite Applications (2)

Challenges while building composite applications

- **Integrate heterogeneous system landscape**
 - Connect to existing repositories
 - Separate Business Objects from persistency
 - Remote data access to backend systems
- **Leverage existing Services**
 - Support semi-structured, ad-hoc business processes
 - Provide collaboration services for Business Objects
 - Workflow tools and workflow patterns
- **Create a homogeneous user experience**
 - Encapsulate user interface from application data
 - Implement consistent pattern-based user interface
- ...

SAP NetWeaver Platform



Composite Application Framework

SAP Enterprise Portal (EP)

SAP Exchange Infrastructure (XI)

SAP Web Application Server (WAS)

SAP Sources

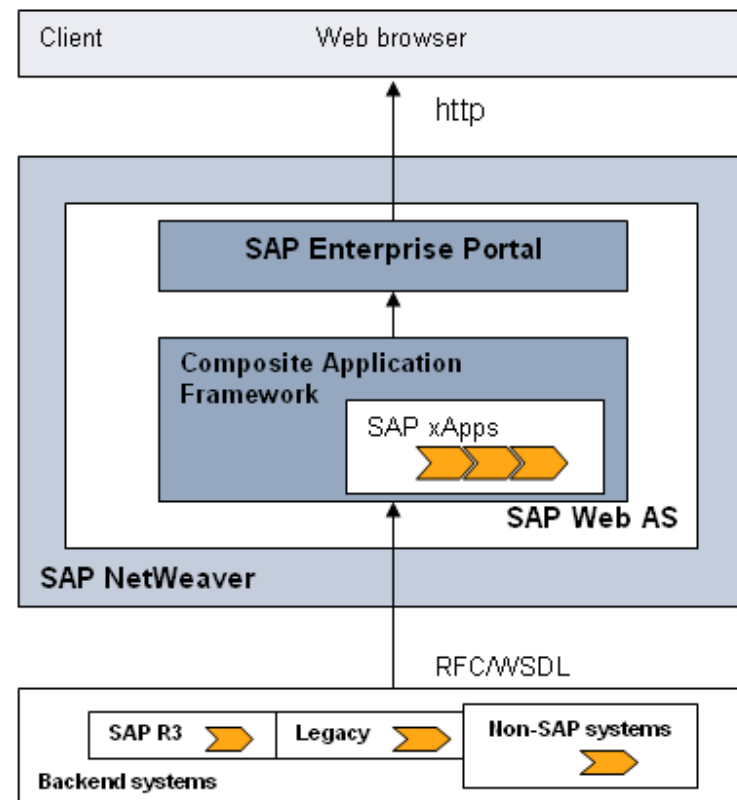


SAP's Composite Applications

Architecture

SAP's composite applications portfolio:

- **SAP xApps**
 - SAP xCQM – Cost&Quotation Management
 - SAP xRPM – Resource&Portfolio Management
 - SAP xPD – Product Definition
 - ...
- **Custom Composite Applications**





What do the components do?

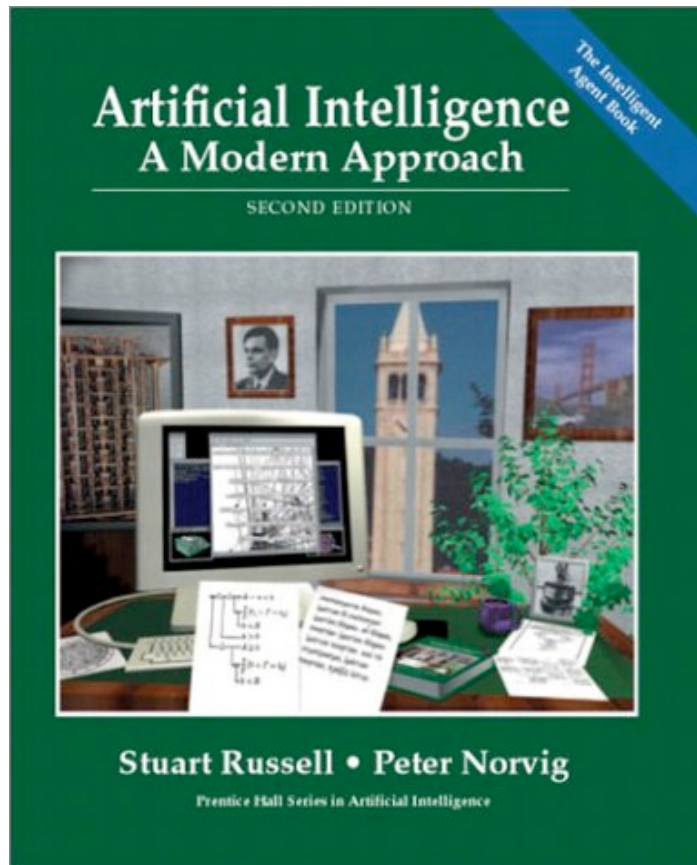
- Low-level services (program level):
 - Call Web Services (e.g., execute remote procedures)
- High-level services (manager level):
 - ERP:
 - E.g.: Which goods sell and which don't?
 - Find compact descriptions of resource consumption/supply
 - CRM:
 - E.g.: Find out about unusual customer behavior
 - Find compact descriptions of customer behavior
 - SRM:
 - E.g.: What information do suppliers need to cooperate
 - Find compact descriptions about suppliers' characteristics



What are the Foundations?

- Philosophy
- Social Sciences
- Economics
- ...
- **Computer Science**
 - Uncertain knowledge and reasoning
 - Probabilistic reasoning
 - Making decisions
 - Learning
 - Learning from observations
 - Knowledge in learning
 - Statistical learning methods
 - Practical aspects
 - Data mining

Literature

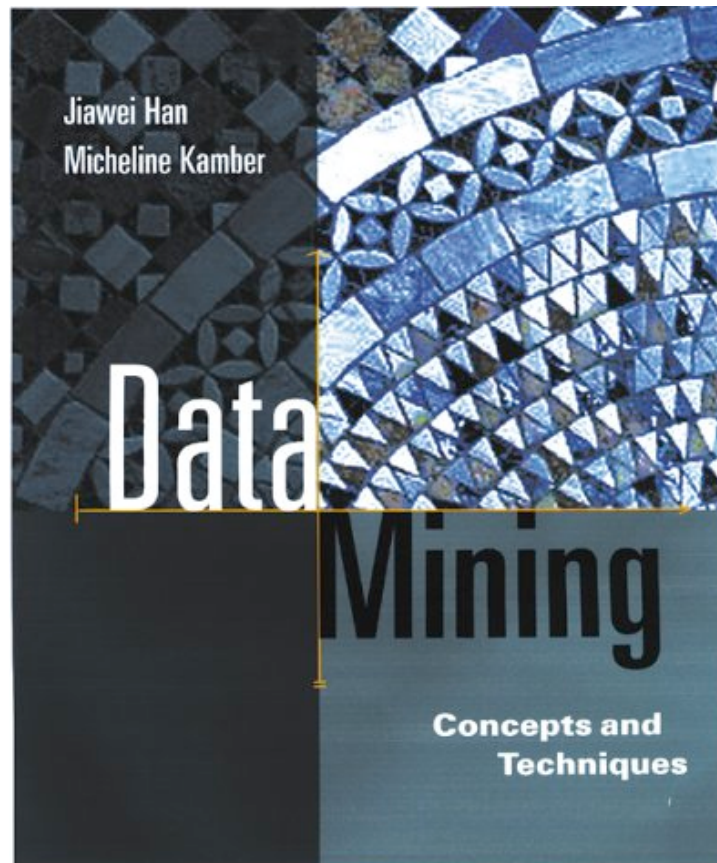


Chapters 13-21

<http://aima.cs.berkeley.edu>



Literature (2)



<http://www.cs.sfu.ca/~han/dmbook>